

Claims

1. A method for triggering input commands of a program run on a computing system, comprising:

monitoring a field of view in front of an image capture device;

identifying a light source within the field of view;

detecting a change in light emitted from the light source; and

in response to detecting the change, triggering an input command at the program run on the computing system.

2. The method of claim 1, wherein the change is one of a color change, and a light variation change.

3. The method of claim 1, wherein the light source is a light emitting diode (LED) capable of emitting multiple colors of light.

4. The method of claim 1, wherein the method operation of identifying a light source within the field of view includes,

masking background light effects within the field of view.

5. The method of claim 4, wherein the method operation of masking background light effects within the field of view includes,

reducing an amount of light allowed into an aperture of the image capture device.

6. The method of claim 1, wherein the input command causes a mode change linked to a cursor displayed on a display screen associated with the computing system.

7. The method of claim 1, wherein the method operation of identifying a light source within the field of view includes,

defining an area representing the light source within a grid associated with the image capture device; and

expanding the area representing the light source within the grid.

8. The method of claim 7, wherein the method operation of expanding the area representing the light source within the grid includes,

defocusing the image capture device relative to the light source.

9. The method of claim 1, wherein the method operation of identifying a light source within the field of view includes,

calculating a centroid of an image representing the light source through a grid associated with the image capture device.

10. The method of claim 9, further comprising:

translating coordinates of the centroid to a location on a display screen associated with the computing system;

detecting movement of the light source within the field of view; and

correlating the movement of the light source to movement of a cursor on the display screen.

11. A method for detecting input commands from an input source within a field of sight of an image capture device, comprising:

minimizing an amount of light entering the image capture device;

detecting a first color light from the input source through the image capture device;

detecting a change from the first color light to a second color light; and

presenting a mode change in response to the change in the first color light signal.

12. The method of claim 11 wherein the method operation of minimizing an amount of light entering an image capture device includes,

reducing an aperture size of the image capture device to enhance a signal representing light from the input source relative to other captured image data.

13. The method of claim 12 wherein the method operation of reducing an aperture size of the image capture device results in filtering background light capable of interfering with light received from the input device.

14. The method of claim 11 wherein the method operation of detecting a first color light signal from the light source through the image capture device includes,

determining a location of a center of the first color light signal on a coordinate system associated with the image capture device; and
mapping the location to a corresponding location on a display screen.

15. The method of claim 11 wherein the method operation of detecting a change from the first color light to a second color light includes,
detecting the second color light from the input source; and
comparing pixel values associated with the first color light to pixel values associated with the second color light.

16. The method of claim 11 further comprising:
reverting to the first color light from the second color light; and
in response to reverting to the first color light, terminating the mode change.

17. The method of claim 11 wherein the mode change is associated with one of a click and drag operation and a highlighting operation.

18. The method of claim 11 wherein the first color light and the second color light originate from one of a single light emitting diode and multiple light emitting diodes.

19. A computer readable medium having program instructions for triggering input commands of a program run on a computing system, comprising:

program instructions for monitoring a field of view in front of an image capture device;

program instructions for identifying a light source within the field of view;

program instructions for detecting a change in light emitted from the light source; and

program instructions for triggering an input command at the program run on the computing system in response to detecting the change.

20. The computer readable medium of claim 19, wherein the change is one of a color change and a light variation change.

21. The computer readable medium of claim 19, wherein the light source is a light emitting diode capable of emitting multiple colors of light.

22. The computer readable medium of claim 19, wherein the program instructions for identifying a light source within the field of view includes,

program instructions for masking background light effects within the field of view.

23. The computer readable medium of claim 22, wherein the program instructions for masking background light effects within the field of view includes,

program instructions for reducing an amount of light allowed into an aperture of the image capture device.

24. The computer readable medium of claim 19, wherein the input command causes a mode change linked to a cursor displayed on a display screen associated with the computing system.

25. The computer readable medium of claim 19, wherein the program instructions for identifying a light source within the field of view includes,

program instructions for defining an area representing the light source within a grid associated with the image capture device; and

program instructions for expanding the area representing the light source within the grid.

26. The computer readable medium of claim 25, wherein the program instructions for expanding the area representing the light source within the grid includes,

program instructions for defocusing the image capture device relative to the light source.

27. The computer readable medium of claim 19, wherein the program instructions for identifying a light source within the field of view includes,

program instructions for calculating a centroid of an image representing the light source through a grid associated with the image capture device.

28. The computer readable medium of claim 27, further comprising:

program instructions for translating coordinates of the centroid to a location on a display screen associated with the computing system;

program instructions for detecting movement of the light source within the field of view; and

program instructions for correlating the movement of the light source to movement of a cursor on the display screen.

29. A computer readable medium having program instructions for detecting input commands from an input source within a field of sight of an image capture device, comprising:

program instructions for minimizing an amount of light entering the image capture device;

program instructions for detecting a first color light from the input source through the image capture device;

program instructions for detecting a change from the first color light to a second color light; and

program instructions for triggering a mode change in response to the change in the first color light signal.

30. The computer readable medium of claim 29 wherein the program instructions for minimizing an amount of light entering an image capture device includes,

program instructions for reducing an aperture size of the image capture device.

31. The computer readable medium of claim 29 wherein the program instructions for detecting a first color light from the light source through the image capture device includes,

program instructions for determining a location of a center of the first color light on a coordinate system associated with the image capture device; and

program instructions for mapping the location to a corresponding location on a display screen.

32. The computer readable medium of claim 29 wherein the program instructions for detecting a first color light from the light source through the image capture device includes,

program instructions for defocusing the image capture device with respect to the light source.

33. The computer readable medium of claim 29 further comprising:

program instructions for reverting to the first color light from the second color light; and

program instructions for terminating the mode change in response to reverting to the first color light.

34. A computing system, comprising:

an image capture device;

logic for monitoring a field of view associated with the image capture device;

logic for tracking a position of a light source associated with an input object;

logic for detecting a color change in the light source; and

logic for triggering a mode change command at a main program run through the computing system, in response to the detected color change in the light source.

35. The computing system of claim 34, wherein the computing system is one of a game console, a general computer, networked computer, and a distributed processing computer.

36. The computing system of claim 34, wherein the logic for detecting a color change in the light source includes,

logic for detecting a change in a pixel value associated with the light source;

and

logic for detecting a change in a position of the light source relative to the image capture device.

37. The computing system of claim 34, wherein each logic element is one or a combination of hardware and software.

38. The computing system of claim 36, wherein the logic for detecting a change in a position of the light source relative to the image capture device includes,

logic for calculating a centroid of an image representing the light source through a grid associated with the image capture device.

logic for translating coordinates of the centroid to a location on a display screen associated with the computing system;

logic for detecting movement of the light source within the field of view; and
logic for correlating the movement of the light source to movement of a cursor on the display screen.

39. The computing system of claim 38, wherein the logic for correlating the movement of the light source to movement of a cursor on the display screen includes,
logic for adjusting a scale associated with translation of the movement of the light source to the movement of the cursor according to a distance of a user relative to the image capture device.

40. The computing system of claim 34, further comprising:
logic for minimizing an amount of light entering the image capture device in order to mask background light not associated with the light source.

41. An input device for interfacing with a computing device, comprising:
a body;
a light emitting diode (LED) affixed to the body;
a power supply for the LED;
a mode change activator integrated into the body, the mode change activator configured to cause a variation of a light originating from the LED, wherein the variation is capable of being detected to cause a mode change at the computing device.

42. The input device of claim 41, wherein the mode change activator is configured to cycle between two variations of the light.

43. The input device of claim 41, wherein the body includes a first end and a second end, a first LED affixed to the first end, a second LED affixed to the second end.

44. The input device of claim 43, wherein the first LED emits a first variant of light and the second LED emits a second variant of light.

45. The input device of claim 41, further comprising:
an infrared emitter.

46. The input device of claim 41, wherein the body includes a first LED adjacently located to a second LED, the first LED emitting a first variant of light and the second LED emitting a second variant of light.

47. The input device of claim 41, wherein the body is configured to be held within a human hand.

48. The input device of claim 41, wherein the body is a ring configured to fit over a human finger.

49. The input device of claim 41, wherein the body is thimble shaped and the LED is affixed to a base of the thimble shaped body.

50. The input device of claim 41, wherein the mode change activator is configured to cycle between at least three light variant changes.